

Advanced Cryogenic Fabry-Perot Interferometer Development

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Description and Objectives

The advanced MOES Fabry-Perot etalon and technologies developed under this SBIR phase II proposal can be used in the remote sensing of O₃, CO, CO₂, and other trace gases for Earth system science and defense applications.

Build upon success of Phase I by building the tunable cryogenic etalon that was designed in Phase I and implementing this tunable cryogenic etalon into the existing MOES optical system and detector.

Demonstrate that this etalon design can be spaceflight qualified.



Approach

The piezoelectric actuator design from Phase I will be used with existing CLIO and detector hardware to build and test a tunable cryogenic Fabry-Perot etalon for remote sensing applications of several gases. Characterization testing will be done before and after vibration and thermal testing.

Subcontractors/Partners

None

Schedule and Deliverables

A tunable MOES Fabry-Perot interferometer

Vibration and thermal test data

Complete characterization of the system before and after vibration and thermal testing.

NASA & Commercial Applications

- Detection of methane / ethane pipeline leaks
- Dispersion compensation module and wavelength locker in Wavelength division multiplexing (WDM) systems
- Remote sensing of O₃, CO, CO₂, and other trace gases for Earth system science and defense applications